

Patent Claims

1. Nucleic acid which codes for a plant or animal nuclear base transporter, selected from:

- a) Nucleic acid which is obtainable through complementation of nuclear base transporter-deficient host cells with a plant or animal gene bank and selection of nuclear base transporter-positive host cells;
- b) Nucleic acid with a sequence which codes for a protein with a sequence according to SEQ ID NO 8 or SEQ ID NO 9;
- c) Nucleic acid which hybridizes with a nucleic acid according to b);
- d) Nucleic acid which in consideration of degeneration of the genetic code would hybridize with a nucleic acid according to b) or with the sequence complementary to b);
- e) Derivatives of a nucleic acid according to a) to d) obtained through substitution, addition, inversion and/or deletion of one or more bases;
- f) Nucleic acid complementary to a nucleic acid according to one of the groups a) to e);

with the proviso that nucleic acids with a sequence according to one of the SEQ ID NO 3 to 5 are excluded.

2. Nucleic acid according to Claim 1, **characterized in** that it includes the coding sequence of one of the sequences according to the SEQ ID NO 1, 2, 6, 7, or 10 or a derivative derived from these through substitution, addition, inversion and/or deletion of one or more bases.

3. Nucleic acid according to one of the Claims 1 or 2, **characterized in** that it is a DNA.

4. Fragment of a nucleic acid according to one of the claims 1 to 3, **characterized in** that in anti-sense orientation to a promoter it can inhibit the expression of a nuclear base transporter in a host cell.

5. Fragment according to Claim 4, **characterized in** that it includes at least 10 nucleotides, preferably at least 50 nucleotides, especially preferably at least 200 nucleotides.

6. Construct containing a nucleic acid according to one of the Claims 1 to 3 and/or a fragment according to one of the claims 4 or 5, under the control of the elements regulating expression.

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7. Construct according to Claim 6, **characterized in** that the nucleic acid or the fragment is in anti-sense orientation to the regulatory element.
8. Construct according to one of the Claims 6 or 7, **characterized in** that it is available in a plasmid.
9. Host cell containing a nucleic acid according to one of the Claims 1 to 3 and/or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 and/or a fragment of one of the aforementioned nucleic acids and/or a construct according to one of the Claims 6 to 8.
10. Host cell according to Claim 9, **characterized in** that it is selected from bacteria, yeast cells, mammalian cells and plant cells.
11. Transgenic plant as well as plant parts and/or seeds of the plant containing a nucleic acid according to one of the Claims 1 to 3 and/or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 and/or a fragment of the aforementioned nucleic acids and/or a construct according to one of the Claims 6 to 8.
12. Transgenic plant, part of plant, host cell and/or seeds according to one of the Claims 9 to 11, **characterized in** that the nucleic acid or the fragment or the construct is integrated into a site on the genome which does not correspond to its natural position.
13. Protein obtainable through expression of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one on the SEQ ID NO 3 to 5 in a host cell.
14. Antibodies which react with a protein according to Claim 13.
15. Process for the manufacture of a transgenic plant, which includes the following steps:
- insertion of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 and/or a fragment of this nucleic acid into a plant cell; and
 - regeneration of a plant from the transformed plant cell.
16. Process for the influencing of the nuclear base transporter properties of a plant, part of a plant and/or of seeds, which includes the step:
- insertion of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 and/or a fragment of this nucleic acid into a plant cell and/or a plant.
17. Use of plant cells according to Claim 10 for the regeneration and manufacture of entire plants.

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18. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 for the isolation of homologous sequences from bacteria, fungi, plants, animals and/or human beings.
19. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 for the expression of a nuclear base transporter in prokaryotic and/or eukaryotic cells.
20. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 under the control of a regulatory element in anti-sense orientation for the inhibition of the expression of an endogenous nuclear base transporter in prokaryotic or eukaryotic cells.
21. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 for the manufacture of useful transgenic plants.
22. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 for the identification of inhibitors of nuclear base transport.



Summary

Nucleic acids which code for nuclear base transporters

The invention concerns a nucleic acid coding for a plant or animal nuclear base transporter and various uses of this nucleic acid. In addition the invention concerns a fragment of the nucleic acid, a construct containing the nucleic acid and/or a fragment thereof, and a host cell with the nucleic acid, the fragment and/or the construct. By the present invention there is in addition included a procedure for the manufacture of a transgenic plant by use of the aforementioned nucleic acid as well as a procedure for influencing the nuclear base transporter properties of a plant, part of a plant, a plant cell and/or of seeds.

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FIGURES:

Figure 1. Missing, presumably since the original is in English

Figure 2. Ordinate: Cytosine uptake (nmol/mg dry weight x min.) Abscissa: pH

Figure 3. Ordinate: Cytosine uptake (nmol/mg dry weight) Abscissa: Time (min)

Figure 4. Ordinate: Adenine uptake [%] Abscissa: l->r: adenine, adenosine, cytosine, cytidine, hypoxanthine, thymine, uracil, ATP, CTP, GTP, TTP, cAMP, kinetine, kinetine riboside, zeatine, zeatine riboside, nicotine, caffeine

Figure 5. Heading: Substrate concentration: 100µM trans-zeatine
Ordinate: Counts per minute Abscissa: Time (secs) (Kontrolle = control)

Figure 6. a) Sense

b) Anti-sense

Figure 7. (Translation not needed)

Figure 8. (No text)

Figure 9. Heading: % caffeine.

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